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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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07/07/2003

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08/01/2008

EXAMINER

AFREMOVA, VERA

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/614,906	<b>Applicant(s)</b> STAMETS, PAUL EDWARD	
	<b>Examiner</b> Vera Afremova	<b>Art Unit</b> 1657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 27,33,34,42,43,48,98 and 99 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27, 33, 34, 42, 43, 48, 98 and 99 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Claims 27, 33, 34, 42, 43, 48, 98 and 99 as amended (5/15/2008) are pending and under examination.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 27, 33, 34, 42, 43, 48, 98 and 99 as amended remain/are rejected under 35 U.S.C. 102(b) as being anticipated by US 4,589,225 (Stensaas) as explained in the prior office action.

Claims are directed to a composition that is a delivery system for mycotechnologies as intended to benefit plant growth wherein the composition comprises 1) a generic “cardboard box” material, 2) a fungal inoculant of generic saprophytic mushroom fungi and mycorrhizal fungi in forms of spores, mycelium, powdered mushrooms and/or combinations thereof; and 3) generic seeds; wherein the cardboard box material is infused with the fungal inoculant and seeds. Some claims are further directed to seeds of various plants. Some claims are further drawn to incorporation of liquids, glues, adhesives, etc. into the composition. Some claims are further drawn to the use of cardboard material that is corrugated or pressed.

US 4,589,225 (Stensaas) discloses a composition that is a delivery system for mycotechnologies intended to benefit and to fertilize crops and other plants. The disclosed

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composition comprises 1) a “primary packaging” material, 2) a fungal inoculant or “propagules of MF” microorganisms and 3) seeds; for example: see at col. 4, lines 1-9.

The disclosed seeds belong to generic plants including crops and woody plants within the broadest meaning of the pending claims 33 and 48.

The disclosed fungal inoculant or “propagules of MF” include spores and mycelium or hyphae (col. 5, line 17; col. 8, line 40). The disclosed “MF” microorganisms are generic mycorrhizal fungi that include the ecto- and endo- forms that are capable to colonize both root surfaces and root insides (col.1, lines 30-40) and, thus, the “MF” microbial inoculant as disclosed falls within the broadest reasonable meaning of the claimed terms “saprophytic” (capable of obtaining nutrients from non-living matter including soil nutrients) and “mycorrhizal fungi” (obtaining nutrients from plant host) as recited in claims 1 and 98.

The disclosed “primary packaging” is a “cardboard” box material such as cellulose fibers (col. 5, lines 23-26) that is shaped into desired forms including corrugated cardboard-type packages or generic boxes (col. 10, lines 24-33) within the meaning of the claims 1 and 99, for example. The cited patent teaches the concept of cardboard box material being “infused” with the fungal inoculant and seeds (fig. 7, for example) since the fungal spores, fungal mycelium and plant seeds are incorporated into the cellulose support matrix that is shaped into strips or cardboard packages (col. 10, lines 26-33).

The disclosed delivery system might be dry, moist or wet (col. 4, line 29) and, thus, it comprises liquid that is present or that is removed within the meaning of the pending claims 34 and 38-41. The disclosed delivery system incorporates glues, adhesives, etc.; for example: see col. 8, lines 48-49.

Thus, the cited patent US 4,589,225 (Stensaas) teaches a delivery system for mycotechnologies that comprises identical components as required for the claimed product.

Thus, the cited patent US 4,589,225 (Stensaas) anticipates the claimed invention.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 27, 33, 34, 42, 43, 48, 98 and 99 as amended remain/are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,589,225 (Stensaas) taken with Ineichen et al. ("Changes in the fungus-specific, soluble-carbohydrate pool during rapid and synchronous ectomycorrhiza formation of *Picea abies* with *Pisolithus tinctorius*". Mycorrhiza. 1992, 2(1), pages 1-7), US 5,022,182 (Anderson) and 5).

Claims as above.

The cited patent US 4,589,225 (Stensaas) is relied upon as explained above for the disclosure of a product such as a mycotechnologie delivery system intended to benefit plant growth and to fertilize crops and other plants wherein the product comprises cellulose matrix used for making cardboard packages that incorporates or "infused" with fungal inoculants and plant seeds. The fungal inoculants and plant seeds are generic species as disclosed by US 4,589,225 (Stensaas). In particular, the cited patent refers to the fungal inoculant as "MF" or a generic mycorrhizal fungi that, accordingly to the definitions of the cited patent, include both ecto-forms and endo-forms that are capable to colonize root surfaces and root insides

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respectively (col.1, lines 30-40) and, thus, the generic “MF” microbial inoculant as disclosed falls within the broadest reasonable meaning of the claimed terms “saprophytic” (capable of obtaining nutrients from non-living matter including soil nutrients) and “mycorrhizal fungi” (obtaining nutrients from plant host) as recited in claims 1 and 98. Moreover, the reference by Ineichen et al. demonstrates (see entire document including abstract) that the beneficial mycorrhizal fungi such as *Pisolithus tinctorius* are capable to develop ectomycorrhiza on root systems of plants such as *Picea abies* and they are also capable to colonize the cardboard materials, thus, being both mycorrhizal and saprophytic fungal inoculant.

The other references US 5,022,182 (Anderson) and Fravel et al. are relied upon for the teaching about various biocontrol products that are beneficial for plant growth and crop fertilization wherein the biocontrol agents include various fungi including mycorrhizal fungi (US 5,022,182) and saprophytic fungi (Fravel et al.). The references teach that the products are applied in many ways including seed treatment and provided in many forms including various packaging for combination of seeds with fungal inoculants as intended to fertilize crops and other plants.

US 4,589,225 (Stensaas) is lacking particular disclosure about the presence of additional “educational” materials and rescue kit components made from or packaged in cardboard materials. However, US 5,022,182 (Anderson) demonstrates incorporation of informational tags and indicators fabricated from cardboard (col. 8, lines 14-17) into the delivery systems of seeds and plant fertilizers (Fig. 1-9) including beneficial microorganisms (col. 9, lines 17-19).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to obtain various biocontrol products as intended to benefit plant

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growth and crop fertilization including various fungal mycorrhizal and saprophytic inoculants because the biocontrol products are applied in many ways including seed treatment and provided in many forms including various packaging for combination of seeds with fungal inoculants as adequately demonstrated by the cited prior art. Thus, the claimed invention as a whole was clearly *prima facie* obvious, especially in the absence of evidence to the contrary.

The claimed subject matter fails to patentably distinguish over the state art as represented by the cited references. Therefore, the claims are properly rejected under 35 USC § 103.

### ***Response to Arguments***

Applicant's arguments filed 5/15/2008 have been fully considered but they are not persuasive.

With regard to the claim rejection under 35 U.S.C. 102(b) as being anticipated by US 4,589,225 (Stensaas) Applicant argues that the cited patent does not teach the use of both “saprophytic” and “mycorrhizal” fungal inoculants (response page 5). However, the instant claims as written are drawn to the use of a single fungal inoculant or “a fungal inoculant” as claimed that is selected from the Markush group. Moreover, the pending claims are not limited to any particular fungal species and the pending claims are not limited to any specific and/or mutually exclusive specific representatives of “saprophytic” and “mycorrhizal” fungal inoculants as argued. The cited patent US 4,589,225 (Stensaas) clearly discloses the use of “MF” fungi wherein the “MF” fungal inoculant include both ecto- and endo- forms capable to colonize root surfaces and root insides (col.1, lines 30-40) and, thus, the “MF” microbial inoculant as disclosed by the cited prior art falls within the broadest reasonable meaning of both claimed terms “saprophytic” (capable of obtaining nutrients from non-living matter including soil nutrients) and

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“mycorrhizal fungi” (obtaining nutrients from plant host) as recited in claims 1 and 98.

Moreover, the “mycorrhizal” fungi, that colonize the plant roots and utilize fixed carbon from the plant photosynthates, are also “saprophytic” fungi since they obtain nutrients from non-living matter in soil including decaying organic debris in soil, for example: organic phosphorous compounds (US 4,589,225 at col. 1, lines 43-50 and col. 2, line 37).

The newly inserted limitation “mushroom fungi” is broad and vague in the light of specification (page 78). Accordingly to the disclosure the “mushroom fungi” belong to “fungi imperfecti” that are characterized by both asexual and sexual reproduction. The claimed invention requires a fungal inoculant to be in a form of spores. The cited US 4,589,225 (Stensaas) teaches providing the “propagules” fungal inoculant in a form of spores (col. 5, line 17) and also by growing “fruiting bodies” (col. 5, line 21). Thus, the fungal inoculant of the cited patent is not different from the claimed fungal inoculant as disclosed by the cited patent, as presently claimed, as argued and when read in the light of instant specification.

Furthermore, accordingly to the applicant’s definitions in the as-filed specification (page 3, lines 5-7) the claimed term “saprophytic fungi” is also applied to those fungi that “form symbiotic, mutually beneficial relationship with a number agricultural crops” or plants. Thus, the functional characteristics of the claimed fungal groups “saprophytic” and “mycorrhiza” fungi are the same and/or overlapping as intended by applicant when the instant claims are read in the light of the specification.

Applicant’s argument (response page 6) that the cited patent US 4,589,225 (Stensaas) does not explicitly teaches the use of a “cardboard box” are not found particularly persuasive because the disclosed “primary packaging” is made from a “cardboard” box material such as



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cellulose fibers (col. 5, lines 23-26) and it is shaped into desired forms including corrugated cardboard-type packages or some generic boxes (col. 10, lines 24-33) within the meaning of the claims 1 and 99, for example. The cited patent clearly teaches the concept of cardboard box material being “infused” with the fungal inoculant and seeds (fig. 7, for example) since the fungal spores, fungal mycelium and plant seeds are incorporated into the cellulosic support matrix that is shaped into strips or sheets that form cardboard packages (col. 10, lines 26-33). Applicant also argues that the cited patent does not explicitly use the phrase “box” but it discloses “an envelope”. However, an envelope made from cardboard material is “a cardboard box”.

With regard to the claim rejection under 35 U.S.C. 103(a) Applicant argues that the cited prior art neither teaches nor suggest the use of “saprophytic fungi” and the use of “a cardboard box” in the final product (response pages 9-10).

These arguments are not found persuasive because the cited prior art as a whole clearly discloses same or similar products that are delivery systems as intended to benefit plant growth and to fertilize crops or plants and that comprise cellulosic matrix used for making cardboard packages incorporating or “infused with” fungal inoculants and plant seeds. US 4,589,225 discloses incorporation of a generic fungal inoculate “MF” that is either or both “saprophytic” fungi (ecto-form) and “mycorrhizal” fungi (endo-form) within the broadest reasonable meaning of the claims.

The presently claimed fungal inoculant(s) is/are generic and not limited to any specific fungal species. It is well known that “mycorrhizal” fungi such as *Pisolithus tinctorius* are also

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saprophytes since they are capable to colonize non-living matter including cardboard materials and they also to develop ectomycorrhiza on root systems of plants such as *Picea abies*, as evidenced by the reference by Ineichen et al., for example: see abstract.

Furthermore, the term “box” or “cardboard box” is taught, suggested or at the very least encompassed by US 4,589,225 by teaching the use of a “container” (col. 4, line 31) made from “cardboard” (col.10, line 31) as well as an envelope made from cardboard material than would a cardboard box.

Thus, the cited references are in the same field of endeavor and they seek to solve the same problems as the instant application and claims, and one of skill in the art is free to select components available in the prior art, *In re Winslow*, 151 USPQ 48 (CCPA, 1966).

The claimed subject matter fails to patentably distinguish over the state art as represented by the cited references. Therefore, the claims are properly rejected under 35 USC § 103.

No claims are allowed.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vera Afremova whose telephone number is (571) 272-0914. The examiner can normally be reached from Monday to Friday from 9.30 am to 6.00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon P. Weber, can be reached at (571) 272-0925.

The fax phone number for the TC 1600 where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology center 1600, telephone number is (571) 272-1600.

Vera Afremova, AU 1657

July 31, 2008

VERA AFREMOVA

PRIMARY EXAMINER

/Vera Afremova/  
Primary Examiner, Art Unit 1657